

## Integrated Defensive Electronic Countermeasure (IDECM)

The Navy intends for the Integrated Defensive Electronic Countermeasures (IDECM) suite to provide self-protection and increased survivability for tactical aircraft against radio frequency and infrared surface-to-air and air-to-air threats. The current IDECM Block II and Block III program is to counter radio frequency-guided surface-to-air missiles. The major hardware components for the IDECM program to develop are the IDECM Radio Frequency Countermeasures (RFCM) system and the ALE-55 Fiber Optic Towed Decoy (FOTD), which is towed behind the aircraft. The Navy intends for the ALE-55 FOTD to be compatible with existing launcher and controllers used with the currently fielded ALE-50 Advanced Airborne Expendable Decoy. The on-board capability will provide some protection even if operational maneuvers or engagements deplete the limited number of FOTDs available on the any given mission.

The Navy has re-baselined the program several times and the resultant IDECM development strategy is a three-phased (Blocks I, II, and III) approach. IDECM Block I is deployed as an interim system consisting of the ALQ-165 Advanced Self-Protection Jammer (ASPJ) and the ALE-50 towed decoy. IDECM Block II, a second interim configuration, replaces the ASPJ with the ALQ-214 (V)2 RFCM (providing on-board jamming capability) and was tested in 2003. IDECM Block III will be the final configuration and will consist of the ALQ-214 (V)2 RFCM and the addition of the ALE-55 FOTD. The IDECM RFCM engineering and manufacturing development contract included the Air Force requirements for a common FOTD and techniques generator. The Air Force selected components of IDECM RFCM for the B-1B Defensive System Upgrade Program (DSUP) and the F-15. In 2002, the Air Force cancelled B-1 DSUP while IDECM was experiencing delays and cost overruns. The Air Force still intends to use portions of the IDECM suite as part of the F-15 electronic warfare suite.

Prior to the Phase block approach, the ALQ-214 and ALE-55 completed a limited Operational Assessment in 2000 and was assessed to be potentially operationally effective and potentially suitable. In FY01, the Navy decided to focus testing on the Block II and wait for Block III, instead of doing them concurrently. The Operational Test and Evaluation Force (OPTEVFOR) will conduct the majority of Block III operational testing in FY05 and FY06. DOTE approved the IDECM Block II Test and Evaluation Master Plan in October 2002.

### TEST & EVALUATION ACTIVITY

OPTEVFOR completed a combined developmental test/operational test flight in October 2002. The Navy used data from these tests to supplement the operational evaluation (OPEVAL), which the Navy began in November 2002 and completed in May 2003. The Navy resolved all priority A (highest priority) system anomaly reports prior to the OPEVAL, and waived five priority B system anomaly reports involving RWR-RFCM integration for the Block II OPEVAL. The rack for mounting the RFCM was determined to be insufficient to tolerate the full life cycle loads. The redesigned rack will be tested when it becomes available. The DOT&E beyond low-rate initial production report is being finalized in preparation for a full-rate production decision in 1QFY04. ASN/RD&A is the decision authority.

A verification and correction of deficiencies test is scheduled to begin in CY04. ALE-55 FOTD developmental testing continued at a low level in preparation for IDECM Block III testing. Separation and final towline evaluation flight tests are scheduled in FY04 to resolve separation and towline risks of the ALE-55. F-15 developmental testing is underway and includes side-by-side testing of a Raytheon fiber optic ALE-50 variant with the ALE-55 FOTD.



*The Integrated Defensive Electronic Countermeasures Block II, consisting of both an onboard jammer and a towed decoy, enhances aircraft survivability against radio frequency-guided missiles.*

# NAVY PROGRAMS

## TEST & EVALUATION ASSESSMENT

The Navy fielded Block I on initial F-18E/F deployments and, by virtue of being an interim solution, has limited logistics supportability. Follow-on IDECM Blocks II or III need to produce an effective and suitable replacement for the Block I suite before its available logistics support expires. Block II performance results in developmental test and OPEVAL indicate the system was tested adequately and is operationally effective and operationally suitable, but needs suitability improvement.

The IDECM Block II showed a substantial contribution to aircraft survivability, both in the absolute and as compared to the current on-board F/A-18C ECM system, the ALQ-126B. OPTEVFOR should have more thoroughly tested joint interoperability, reprogramming capability, and system response. Although most available test assets were used, the diversity of threats tested was very small. This is due to a shortfall in electronic warfare test capabilities. A substantial and sustained investment in both the number of different threat systems and the quality of data available from them is needed so that future electric countermeasure systems can be more completely tested. A common family of missile fly-out models should be supported (several exist) to maximize commonality across test facilities.

Test results showed suitability concerns. The cockpit interface and controls made it very difficult for the pilot to set-up and determine the state of the system. This led to two safety issues involving inadvertent or partial decoy deployment. Control of chaff and flare dispense was also difficult. Updates to both the ALQ-214 and Mission Computer are being worked and are scheduled to be tested 2QFY04. Reliability was acceptable, but far from the desired mature system levels, and two lots of bad squibs (explosive charges to launch the decoys) were undetected until late in the test and drastically reduced measures of ALE-50 reliability. Built-in test (BIT) performance was marginal. Use of the pilot-initiated BIT allowed an acceptable number of missions to be completed, though without relieving the burden on maintenance of the high BIT false alarm rate.

In the lab environment, the Block III RFCM and FOTD proved to be highly effective and very close to predicted performance. For Block III, the deployment of the FOTD and the durability of the towline under operational conditions are still high risk.